

BOOK REVIEWS

Increasing Productivity of Intensive Rice Systems Through Site-Specific Nutrient Management. Edited by A. Dobermann, C. Witt and D. Dawe. Enfield, NH, USA: Science Publishers and IRRI (2004), pp. 410, US \$49.50. ISBN 1-57808-266-8. doi:10.1017/S0014479705212814

This book reports the initial results of an ambitious international network involving six major rice producing countries, India, China, Indonesia, Thailand, Vietnam and the Philippines. Recommendations to establish the network came from external reviews of research at the International Rice Research Institute in 1992 and from an FAO expert consultation in 1996. Yields from the long term trials conducted at IRRI were declining, and there is a widespread apprehension that intensive farming systems will lead to declining yields of major cereals throughout the world. IRRI's estimate is that to maintain current nutritional standards rice yields will have to increase substantially from present levels of about 4 t/ha to about 6.5 to 7 t/ha by the year 2020.

The aim of the network was to use long-term agronomic experiments to establish how far changes in fertilizer practice could help to achieve this increase. Six chapters in the book describe the initial results of the experiments. Earlier chapters describe in meticulous detail how the agronomic data were derived and in the later chapters an attempt is made to show that nutrient management tailored to local climate and spatial and temporal changes in soil nutrient supplies provides a significant advantage over present farmer practice. Unfortunately, despite the care and attention that the experiments have received, and the rigour of the statistical analyses, no clear advantages have been established. With such a mass of data, the book is difficult to read and it is not clear as to whom it is addressed. It is unlikely to be much help to farmers wishing to optimise their fertilizer use, and provides little assistance to extension agents. Hopefully, continuation of the network will show how far changes in fertilizer practice can contribute to the necessary yield improvements.

D. J. Greenland

Integrated Resource and Environmental Management: The Human Dimension. By A. W. Ewart, D. C. Baker and G. C. Bissix. Wallingford: CABI Publishing (2004), pp. 320, £27.50. ISBN 0-85199-834-8. doi:10.1017/S0014479705222810

This is the only recent book to describe how the many often highly conflicting issues involved in the utilisation and conservation of natural resources may be drawn together in a multidisciplinary context – ‘integrated resource and environmental management’ or ‘IREM’. Although technical issues are addressed, the underlying theme is, understandably, the ‘human dimension’, as it is people’s actions that determine whether sustainable IREM is feasible.

The book is well written, and is primarily aimed at undergraduate students. As such, it has a question section at the end of each of the chapters, as well as a useful glossary of terms used in IREM. The publication will also be of value to a broader audience among those working or interested in natural resource management issues. The book is divided into three sections. The first addresses historical issues and the evolution of IREM, while the second examines underlying principles and the challenges in terms of environmental, social and economic problems stemming from the many conflicting demands on natural resources from different stakeholders. The third section describes the processes involved in achieving meaningful IREM, and its current status and future prospects.

A valuable feature of the publication is the use of multi-author case studies to illustrate the key points made in each chapter. Of these, eight are from the developed world (North America, Europe and Australia) and two from Latin America (Belize and Mexico). This is no doubt a reflection of the more advanced state of IREM in the industrialized countries. All examples are national/local. The broader issue of global climate change is not highlighted in this book, but will add yet another dimension to IREM – perhaps in the next edition.

George Rothschild

Natural Resource Management in Agriculture: Methods for assessing economic and environmental impacts. Edited by B. Shiferaw, H. A. Freeman and S. M. Swinton. Wallingford, UK: CABI Publishing (2004), pp. 250, £65.00. ISBN 0-85199-829-3. doi:10.1017/S0014479705232817

One of the greatest challenges in natural resource management (NRM) is the integration of socio-economic, biological and physical concepts across different agricultural environments. Whilst much of science retreats further, faster and more frenetically towards reductionist solutions, end-users and decision makers demand multidisciplinary approaches which recognise and grapple with the complexities of agricultural systems. This book addresses this chasm in understanding and analysis. After a brief introduction, the text is divided into four sections of 15 chapters. The first section evaluates ecosystem services and biophysical indications of NRM impacts. The second considers methodological advances for impact assessment. A third reviews NRM impact assessment in practice and a concluding section looks towards improved approaches for NRM impact assessment. The contributors reflect the heavy reliance for source material on outputs from the international research system. (Twenty-two of the 30 contributors give CGIAR or FAO addresses and the list of reviewers similarly relies on the international centres.) This is not, in itself, a criticism, though it would have been interesting to include some alternative voices.

The standard of analysis and quality of presentations are high and the material is topical and authoritative. Unlike many such texts, the editors have achieved a clear structure, consistency in nomenclature and coherency within and between themes. The book marks an important milestone in our understanding of how complex agro-ecosystems can be evaluated and how researchers from different disciplines can link their efforts to provide rational methods for NRM assessment. It will be a valuable resource for all of us who claim some but not all of the disciplines within the title.

Sayed Azam-Ali

Food Wars. The Global Battle for Mouths, Minds and Markets. By T. Lang and M. Heasman. London: Earthscan (2004), pp. 365, £19.99 (paperback). ISBN 1-85383-702-4. doi:10.1017/S0014479705242813

Humans have apparently reached a 'critical juncture' in their relationship to food supply and food policy, and both public and corporate policies are failing to grasp the enormity of the challenge. Accordingly, a justification is developed in the Introduction and first chapter of this book for the concept of 'Food Wars', plus analyses of these three food paradigms and the complex relationships between food, diet and health, and related policy responses. Food-wars are described in three chapters: (a) the food wars business, encompassing the global food economy, and the inevitable dig by these authors at GM food, contrasting with their largely uncritical consideration of organic food production; (b) the consumer culture, incorporating topics such as advertising, and the roles of activists and NGOs, and (c) the quality war, a broad-brush chapter on diverse subjects including intensification, biodiversity, pollution, climate change, fish, and the disconnect between the outputs of modern agriculture and ancestral diets. Oh for the joys of the hunter-gatherer existence. The penultimate chapter debates the concepts of food democracy versus food control, and this leads to a final chapter entitled 'The Future', in effect the evangelistic anti-capitalist, anti-conventional-agriculture, pro-'ecology' approach espoused by the authors.

Even so, the book is thought-provoking and offers interpretations that have utility in discussions on nutrition in the advanced economies and specifically in the food production-processing-retailing continuum. I liked the 'Core Arguments' section leading each chapter.

Buy it, read it, and remember that pinch of salt, a supplement so often deprived from primitive or simplistic reading diets despite its gustatory and interpretational benefits.

John R. Hillman

Genetically Modified Crops: Their Development, Uses and Risks. Edited by G. H. Liang and D. Z. Skinner. New York: The Haworth Press, (2004), pp. 394, US \$39.95. (paperback). ISBN 1-56022-281-6. doi:10.1017/S001447970525281X

This edited collection is aimed at postgraduate level and attempts to give a broad coverage of GM issues, with 37 contributors from the USA and China, all of whom are active in the development and application of transgenic technologies. It covers general issues of existing and emerging technologies plus 10 chapters on their usage, in particular mainstream crops including horticultural species.

The chapters on technological issues summarize the current state of the GM art and explain the particular issues that need to be solved in order to achieve the holy grail of stacking particular transgenes in stable, single copies at defined positions in the genomes of elite varieties without generating undesirable side effects. The chapters on individual crops have a generic interest but will obviously be more useful to those working with such species. The choice of crops is essentially mainstream North America and countries of similar climates, so there is almost no coverage of tropical species, apart from rice.

The book finishes with a very brief but fairly balanced discussion of risks and benefits of the technologies. The brevity was disappointing given the major international concerns and political sensitivities over transgenics. Also, for a book published in 2004, it was a pity that the references contained no publications post-2002. Perhaps this indicates a long gestation period. Overall this is a very readable, informative and fairly comprehensive book, that fills an important niche in the market; it will make it a valuable addition to the laboratory library.

Mike Kearsay

Introgression from Genetically Modified Plants into Wild Relatives. Edited by H. C. M. den Nijs, D. Bartsch and J. Sweet. Wallingford: CABI Publishing (2004), pp. 403, £75.00. ISBN 0-85199-816-X. doi:10.1017/S0014479705262816

In January 2000, a project funded by the European Science Foundation, the Assessment of the Impacts of Genetically Modified Plants, held the first of 14 workshops bringing together experts from Europe and across the World. These meetings tackled all aspects of this contentious topic, deliberately held away from open scrutiny to encourage free debate. As a sequel to that project, an open conference was held in Amsterdam in January 2003, bringing together the perspectives and the latest research results of many of the key research groups. The resulting book of 27 chapters is presented in four sections: Hybridization in Crop-Wild Plant Complexes; Gene Flow-Introgression and Adoption of Genes; Impact and Consequences of Novel Traits; and Monitoring-Field Studies, Modelling and Scientific Standards for Regulation. The chapters include thoughtful reviews, straightforward reports on current research, and a helpful contribution on the details of the European Union requirements to monitor for environmental effects of the introduction of GMOs, particularly as they relate to introgression. Reflecting the recent focus of research, about half the book is occupied with studies of introgression between conventional crops and their cross-compatible wild relatives. An insight into the extensive nature of such introgression is given for twelve different crops. Further highlights of the book include a review of the complexities of the impact of insect-resistant GM crops, including their documented environmental advantages, and a reflective contribution on modelling. This book is essential reading for scientists, regulators and educators with an interest in the interaction of GM crops with their environment.

Gavin Ramsay

Environmental Risk Assessment of Genetically Modified Organisms. Vol. 1: A Case study of Bt Maize in Kenya. Edited by A. Hilbeck and D. A. Andow. Wallingford, UK: CABI Publishing (2004), pp. 281, £60.00. ISBN 0-85199-861-5. doi:10.1017/S0014479705272812

The Cartagena Protocol on Biosafety calls for risk assessments to be made before the introduction of GMOs. This volume is the outcome of a stakeholder workshop considering Bt maize for control of stem-boring caterpillar in Kenya under the OILB project 'Development of international scientific biosafety guidelines of transgenic plants'. It describes what would have to be done to provide an assessment for the germplasm developed under the international project 'Insect resistant maize for Africa' as a model for other GMO introductions into developing countries. It covers comprehensively transgene design and expression studies; genotype and phenotype characterization; biodiversity and non-target impacts; gene flow and its consequences and the risks of resistance development. Each transformation event in each genetic background is a unique event requiring a detailed 'case by case' assessment of risks. As in many cases, the germplasm under consideration for introduction is not adequately characterized (or the information is not publicly available) for transgene design, genotype characteristics, gene transmission studies or in any other major way. Worse, it does not provide a 'high dose' strategy for the control of major lowland stem-borer, *Buseola fusca*. Bt genes from hybrids or open-pollinated varieties would rapidly spread to Kenyan landraces with unknown impacts on pests or beneficial insects. Kenyan maize growers give stem-borer a relatively low ranking as a problem. However, the 45% of Kenyan dietary calories which come from maize and the reduction of >10% in maize yields annually caused by stem-borers, means that Bt maize

remains an option worth pursuing and it is a pity that the case study does not draw more on the experience of South Africa in commercializing Bt maize.

Derek Russell

Olive Propagation Manual. By A. Fabbri, G. Bartoloni, M. Lambardi and S. G. Kailis. Collingwood, Australia: CSIRO Publishing (2004), pp. 139, £25.50. ISBN 0-643-06676-4. doi:10.1017/S0014479705282819

This book should be useful to anyone involved with olive propagation, as it appears to include all the information necessary to set up and run an olive nursery. There are chapters on cuttings, on grafting, and on *in vitro* propagation, and also on the construction and organisation of a nursery. Seed germination, to provide rootstocks for grafting is also covered. The expected rooting success for over 400 named clones is given. There are numerous references, including many to papers in Italian. There is a list of 93 germplasm collections in 26 countries, though no indication of how comprehensive the collections are.

Apart from an introductory chapter on flower and fruit biology, the book covers little beyond the practical details of vegetative propagation methods. Although the notes on the cover mention varietal selection for early bearing, disease resistance, etc., there is no discussion of these subjects. Self-incompatibility, and the need for careful choice of compatible clones, is mentioned, but there is no information on which clones are compatible, apart from a graph of flowering dates from some Italian varieties.

Hereward Corley

Saving Seeds: The Economics of Conserving Crop Genetic Resources Ex Situ in the Future Harvest Centres of the CGIAR. By B. Koo, P. G. Pardey and B. D. Wright. Wallingford, UK: CABI Publishing (2004), pp. 232, £49.95. ISBN 0-85199-859-3. doi:10.1017/S0014479705292815

This book is a fascinating overview of the costs, current and predicted, for the maintenance and distribution of the genetic resources collections of the research centres of the Consultative Group on International Agricultural Research (CGIAR). The *raison d'être* for the work is the provision of estimates for an endowment fund to support the gene banks in perpetuity based on recent expenditures, inflation scenarios and other variables. Five of the CGIAR centres (CIMMYT, ICARDA, ICRISAT, IRRI and CIAT) submitted in depth costs for their germplasm conservation programmes for analysis. The details of the five chapters highlight the differences in costs based on crop reproduction requirements (inbreeders, outbreeders and vegetative maintenance), quarantine/plant health, electricity costs and distribution costs. The costs figures were used to extrapolate figures for the other six CGIAR centres conserving crop genetic resources. The majority of germplasm collection costs studied was for seed crops, the CIAT cassava collection being the only significant vegetatively propagated crop. On this basis the omission of the CIP vegetatively propagated collections from the in-depth review was surprising. The final chapter on policy and management implications highlights the cost differentials between centres and outlines a number of policy considerations in relation to an endowment fund, namely the consolidation of collections, charges for germplasm distribution and the use of molecular characterization to enhance conservation and utilisation. Politicians, funding agencies and gene bank scientists will view quite differently the concluding remark that 'to carry the CG conservation effort into the far distant future will not be an exorbitantly costly undertaking'.

Dave Astley

Books currently under review:

Seed Fate: Predation and Seedling Establishment. Edited by P.-M. Forget, J. E. Lambert and S. B. Vander Wall. Wallingford, UK: CABI Publishing (2004), pp. 448, £75.00. ISBN 0-85199-806-2.

Environmental Impacts of Sugar Production. By O. Cheesman. Wallingford, UK: CABI Publishing (2004), pp. 272, £55.00. ISBN 0-85199-981-6.

Conflict, Social Capital and Managing Natural Resources: A West African Case Study. Edited by K. M. Moore. Wallingford, UK: CABI Publishing (2004), pp. 288, £55.00. ISBN 0-85199-948-4.

Flower Seeds: Biology and Technology. Edited by M. B. McDonald and F. Y. Kwong. Wallingford, UK: CABI Publishing (2004), pp. 400, £95.00. ISBN 0-85199-906-9.

Biotechnology of Fruit and Nut Crops. Edited by R. E. Litz. Wallingford, UK: CABI Publishing (2004) pp. 768, £125.00. ISBN 0-85199-619-1.

Plant Diversity and Evolution: Genotypic and Phenotypic Variation in Higher Plants. Edited by R. J. Henry. Wallingford, UK: CABI Publishing (2004), pp. 352, £65.00. ISBN 0-851299-904-2.

Readers may be interested to know about the following publications received but not reviewed because of their limited relevance to the majority of readers of *Experimental Agriculture*.

Association of Applied Biologists 1904–2004: A Celebration of Achievement. Compiled by F. A. Langton, A. R. Thomson and C. A. Millman. Wellesbourne, Warwick: Association of Applied Biologists (2004), pp. 112, £10.00. ISBN 0-9549230-0-6.

Botrytis: Biology, Pathology and Control. Edited by Y. Elad, B. Williamson, P. Tudzynski and N. Delen. London: Kluwer Academic Publishers (2004), pp. 428, £94.00. ISBN 1-4020-2624-2.

Arachis genetic resources in Europe. Ad hoc meeting. 15–16 November 2003, Plovdiv, Bulgaria. Compiled by L. Maggioni, S. Georgiev and E. Lipman. Rome: IPGRI (2004), pp. 44, no price quoted. ISBN 92-9042-647-6.

Report of a Working Group on Beta and World Beta Network. Second joint meeting. 23–26 October 2002, Bologna, Italy. Compiled by L. Frese, C. Germeier, E. Lipman and L. Maggioni. Rome: IPGRI (2004), pp. 127, no price quoted. ISBN 92-9043-656-5.

Preview. Global Status of Commercialized Biotech/GM Crops: 2004. By C. James. Ithaca, NY: ISAAA (2004), pp. 43, US \$35.00. ISBN 1-892456-36-2.

Healing Wounds. How the International Research Centres of the CGIAR Help Rebuild Agriculture in Countries Affected by Conflicts and Natural Disasters. By S. Varma and M. Winslow. Washington DC: CGIAR (2004), pp. 80, no price quoted. ISBN 92-9127-153-9.